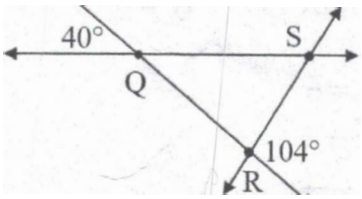
GRID-IN QUESTIONS

Questions 58 - 62

58. Dominic has \$126 made up of \$1 bills, \$5 bills, and \$10 bills. If he has three times as many \$5 bills as \$1 bills and twice as many \$1 bills as \$10 bills, how many \$5 bills he has?

59. $1 - 3(5 - 8) - (-1 + \mathrm{d}) = 4$
What is the value of d in the equation above?

60. What is the measure of $\angle QSR$?



61. What is the x-intercept of the line that passes through the points $(12, 2)$ and $(-6, -4)$?

62. The average of the integers $x^2 + 2$, x, and $5x - 8$ is $x - 2$. What is the largest possible value of x?

MULTIPLE CHOICE QUESTIONS
Questions 63 - 68

63. If there are 6 blips in a lunk and 5 lunks in a peeb, how many square blips are in a square peeb?

A. 30
B. 300
C. 900
D. 9000

64. What is the area of a circle whose circumference is 11π meters?

E. $\frac{11\pi}{2}$ m^2
F. 121π m^2
G. $\frac{11\pi}{4}$ m^2
H. $\frac{121\pi}{4}$ m^2

65. A cylindrical can of soup has a radius of $3cm$ and a height of $10cm$. If the radius is increased by $1cm$ and the height is increased by $2cm$, how much more soup will fit in that can?

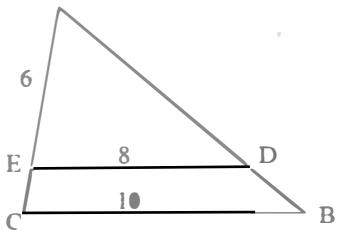
A. 102π cm^3
B. 108π cm^3
C. 122π cm^3
D. 158π cm^3

66. Find the sum of all solutions to the following equation:

$$|3x + 7| = 9$$

E. $-4\frac{2}{3}$
F. $-1\frac{1}{3}$
G. $2\frac{2}{3}$
H. $3\frac{1}{3}$

67. If $DE \parallel BC$, what is the length of CE?



A. 2.5
B. 2
C. 1.25
D. 1.5

68. Which of the following equations has the same solutions as $12x - 3y = -6$?

E. $x + \frac{1}{2} = \frac{y}{4}$
F. $2 + y + 4x = 0$
G. $x - \frac{y}{4} = 1$
H. $12y - 3x = -6$

Questions 69 - 74

69. *The average distance between the Sun* and Pluto is 39.5 AU. If, in an AU, there are 1.5×10^{11} meters, what is the average distance between the Sun and the Pluto in meters?

A. 5.925×10^{10} meters
B. 5.925×10^{11} meters
C. 5.925×10^{12} meters
D. 5.925×10^{13} meters

70 In the following equation, x represents the altitude in feet and y represents the temperature in °F. What is the meaning of the slope in the equation?

$$y = -0.003x + 80$$

E. The slope is the change in temperature for every 1-foot increase in altitude.
F. The slope is the change in temperature when the altitude is 80 feet.
G. The slope is the change in altitude for every 1°F increase in temperature.
H. The slope is the change in altitude when the temperature is 80 °F.

71. Which of the following could NOT be the lengths of the sides of a triangle?

A. 55, 55, 55
B. 1, 44, 44
C. 16, 26, 46
D. 18, 28, 38

72. *A farmer uses a rectangular pen for her* goats. The length of the pen is 2 yards less than three times the width. If the perimeter of the pen is 60 yards, how many square yards is the area of the pen?

A. 124 *sq yards*
B. 132 sq yards
C. 164 sq yards
D. 176 sq yards

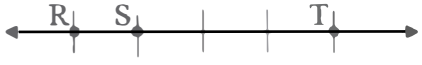
73. The frequency table below shows the number of students in a hockey team that are 10, 11, 12, and 13 years old. Which is larger, the mean age or the median age?

Hockey Team Ages

Age	Number of Players
10	10
11	10
12	20
13	30

E. Mean is larger than median.
F. Mean and median are the same.
G. Median is larger than mean.
H. Cannot be determined.

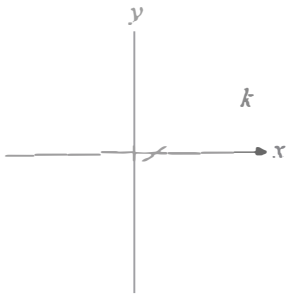
74. The number line below is missing its labels. If S and T are three units apart and T is 22 units less than twice of S, what should the position of point R on the number line?



E. 24
F. 26
G. 28
H. 30

Questions 75 - 80

75. Which of the following could be the equation of line k?



A. $y = 3x + 3$
B. $y = 3x - 3$
C. $y = -3x - 3$
D. $y = -3x + 3$

76. What would be the value of k such that the two lines given below are perpendicular to each other?
$-kx + 3y = 12$
$-3x + 2y = 2k$

E. 2
F. 3
G. -2
H. -3

77. Carmen buys a 500 mL bottle of a sports drink and discovers that it is 2% sugar. She decides to dilute the drink with another sports drink that is only 0.5% sugar. If the result is a drink that is 1% sugar, how much additional liquid did she add to the original drink?

A. 750 mL
B. 800 mL
C. 925 mL
D. 1000 mL

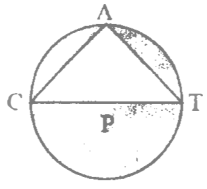
78. Mario and Luigi decided to write a 1000-page book together. Mario can write 5 pages per hour and Luigi can write 4 pages per hour. After finishing the book, they discovered that Mario worked two more hours than Luigi.
If Mario had written the book alone, he would have spent n more hours of his time on the project. What is the value of n?

A. 88 hours
B. 96 hours
C. 104 hours
D. 112 hours

79. Point $P(-3,4)$ is rotated 90° clockwise about the origin to map on to point P'. What is the area of the triangle with vertices P, P', and the origin?

E. 5 square units
F. 7.5 square units
G. 10 square units
H. 12.5 square units

80. If $CA \cong AT$ and the diameter of circle P is 10 inches, what is the area of the shaded region?



E. $(25\pi - 25)\ inches^2$
F. $(25 - 25\pi)\ inches^2$
G. $(100\pi - 100)\ inches^2$
H. $(100 - 100\pi)\ inches^2$

Questions 81-86

81. Consider the following set of numbers: $\sqrt{13}$, π, $\frac{15}{6}$, 3, 2.4

Which of the following is the correct ordering of the set from smallest to largest?

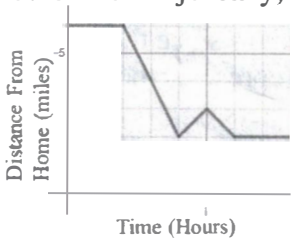
A. 2.4, $\frac{15}{6}$, 3, π, $\sqrt{13}$
B. $\sqrt{13}$, π, $\frac{15}{6}$, 3, 2.4
C. 2.4, $\sqrt{13}$, 3, π, $\frac{15}{6}$
D. $\frac{15}{6}$, 2.4, 3, $\sqrt{13}$, π

82. Simplify the expression below.

$$\frac{(4)^8(9)^5}{(8)^5(27)^3}$$

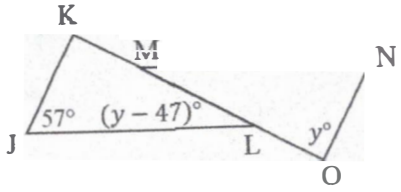
E. $\frac{2}{3}$
F. $\frac{3}{2}$
G. 3
H. 6

83. The graph below represents Yami's distance from home on a hike. Three hours into the journey, Yami is:



A. Five miles from home
B. Heading away from her home at 1mph
C. Heading towards her home at 2 mph
D. Not moving towards her home or away from her home

84. If $\Delta JKL \cong \Delta NOM$, what is the measure of $\angle NML$?



E. 38°
F. 57°
G. 63°
H. 85°

85. Janice has an electric bike. If she uses the motor on the bike, she can increase its speed by 5 mph. If Janice does not use the motor, it takes her 27 minutes to get to work. If she uses the motor, it takes her 18 minutes. How many miles does Janice bike to work?

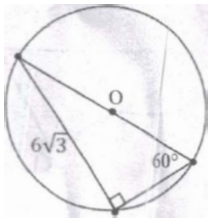
A. 2.5
B. 3.5
C. 4.5
D. 5.5

86. If $p - q < 0$, which of the following statements must be true?

E. p and q are both negative.
F. p and q have opposite signs.
G. Both p and q are zero.
H. p is less than q.

Questions 87-92

87. What is the circumference of Circle O?



A. 6π
B. 8π
C. 10π
D. 12π

88. *Uri's school* starts at 8 a.m. and ends at 3 p.m. He arrives three minutes late for the first day of school and every day after that he arrives 3 minutes later than the day before. At what time will he arrive on the 88^{th} day of school?

E. 11:48 *a.m.*
F. 12:08 *p.m.*
G. 12:24 *p.m.*
H. 01:00 *p.m.*

89. If $x \curlywedge y$ means $(2x)\%$ of $3y$, what is the value of $4 \curlywedge 50$?

A. 4
B. 7.5
C. 0
D. 12

90. Let S be the set of integers between -10 and -5 inclusive.
Let T be the set of integers that are solutions to the inequality $-4x + 6 > -2x + 20$
What is the sum of integers that are in both sets?

E. -15
F. 15
G. -27
H. 0

91. Which of the following could be the difference between the two solutions to the following equation:
$(x-5)(x+2) = (5-x)(5+x)$

A. 2.5
B. 5.5
C. 8.5
D. 12.5

92. Mr. Tucker's class decided to grow a plant. They created a chart below to record the plant's height over time. In their chart, t represents time in days since they started the project, and h represents the height of the plant in centimeters.
During which period the average rate of growth was the fastest?

t	1	4	10	15	18
h	0	2	8	15	17

E. Day 1 to Day 4
F. Day 4 to Day 10
G. Day 10 to Day 15
H. Day 15 to Day 18

Questions 93 - 98

93. Sonya has a cell phone plan that charges 9 cents per phone call and 2 cents per text message. Her dad has a different plan that charges 5 cents per phone call and 3 cents per text message. During one day, both Sonya and her dad spent the same amount of money by sending the same number of texts and making the same number of calls. The number of texts was three less than five times the number of calls. How much money did Sonya spend on her cell phone that day?

A. \$0.49
B. \$0.50
C. \$0.51
D. \$0.52

94. A triangle has angles with measures of $x°$, $2x°$, and $5x°$.
What is the supplement of the complement of the smallest angle?

E. 22.5°
F. 67.5°
G. 98.5°
H. 112.5°

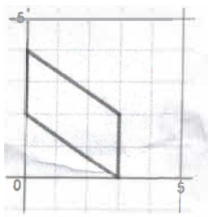
95. Which of the following is the closest approximation of $\sqrt{10}(2\sqrt{10} - 3)$?

A. 9
B. 11
C. 13
D. 15

96. Nickie has a bag of candies that she decides to share with her three siblings. She gave one quarter of the candies to her younger sister and one third of the candies to her older sister. Of the remaining candies, she gave one fifth to her brother and kept the remaining candies for herself. If Nickie's younger sister got 15 candies, how many did Nickie keep for herself?

E. 20
F. 15
G. 25
H. 10

97. What is the area of the parallelogram shown below?



A. 4.5 *square units*
B. 5 *square units*
C. 5.5 *square units*
D. 6 *square units*

98. What is the equation of the line that passes through the point $(-18, 18)$ and is parallel to the line $x = -3$?

E. $x = -18$
F. $x = 18$
G. $y = -18$
H. $y = 18$

Questions 99 - 104

99. Dotty needs to make seven phone calls in a specific order. Each call will take twice as long as the one before it. If the first four calls take a total of 45 minutes, how many minutes longer is the last phone call than the first phone call?

A. 95 min
B. 129 min
C. 161 min
D. 189 min

100. In the figure below, the ratio of the shaded area to the non-shaded area is 3:1.
What is the ratio of the radius of the outer circle to the radius of the inner circle?

E. 2:1
F. 3:1
G. 4:1
H. 5:1

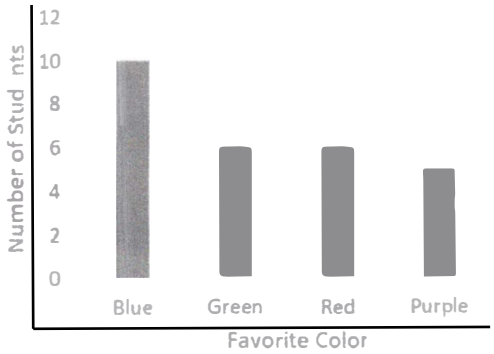
101. How many two-digit numbers are there that are NOT multiples of 5?

A. 69
B. 70
C. 71
D. 72

102. The volume of a cone is $40\pi\ m^3$. If height of the cone is twice as long as te radius, which of the following integers is the closest approximation of the height?

A. 2 meters
B. 4 me ers
C. 6 meters
D. 8 meters

103. The graph below shows the number of students in Grade 4, who chose blue, gree red, and purple as their favorite color. How many more students chose blue t an purple as their favorite color?



A. 5
B. 6
C. 7
D. 8

104. What is the value of the expression $x^5 - x^4 + x^3 - x^2 - x$ if $x = -2$?

E. 18
F. -58
G. -42
H. -10

Questions 105-110

105. Which of the following points is on the line y = 3x - 1?

E. (0.3, 0.9)
F. (- 0.4, - 0.2)
G. (0.5, -0.5)
H. (- 0.6, - 2.8)

106. The sum of three consecutive even integers is the same as the sum of four consecutive odd integers. If the smallest even integer is one more than the largest, What is the sum of three consecutive even integers?

E. 66
F. 68
G. 70
H. 72

107. Andy finished 12 paintings by the time his school has his Art show. If one of Andy's paintings is to be displayed in the library and one is to be displayed in cafeteria, in how many ways can he pick two of his paintings to be displayed? Assume displaying a painting in the library is different than displaying it in the cafeteria.

A. 132
B. 144
C. 288
D. 12!

108. The wheels of the car have a diameter of *d* feet. How many revolutions will one of the car wheels make on an *m* miles drive to the grocery store? One mile is 5,280 feet.

E. $\frac{\pi dm}{5280}$
F. $\frac{\pi d}{5280m}$
G. $\frac{5280m}{\pi d}$
H. $\frac{m}{5280\pi d}$

109. Which of the following is the simplified version of $(8x^2 - 3x^3 + 1) - x^2(5x - 6)$?

E. $8x^3 + 14x^2 + 1$
F. $8x^3 - 14x^2 - 1$
G. $-8x^3 + 14x^2 + 1$
H. $-8x^3 - 14x^2 - 1$

110. A geology class performs a study in which they measure both the depth of the river and the velocity of the current at 30 different locations. They discover there is a strong positive correlation between the depth of the river and the velocity of the current. Which of the following statements must be true?

A. When the river is very deep, the velocity of the current is very fast.
B. As the river becomes deeper, the velocity of the current becomes faster.
C. As the river becomes shallower, the velocity of the current becomes faster.
D. When the river is very shallow, the velocity of the current is very fast.

Questions 111-114

111. Which of the following equations has no solution?

A. $x = 4$
B. $3x - 5y = 10$
C. $\sqrt{5-x} - 10 = 5$
D. $|5-x| + 10 = 5$

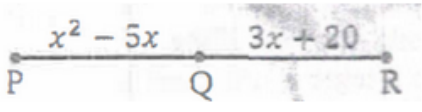
112. If the diagonal of a square is 10 inches, what is the area of the square?

E. 10 square inches
F. 25 square inches
G. 50 square inches
H. 100 square inches

113. On the first day of the year, the tax for soda will increase from 4% to 5%. If a grocery store usually recieves $800 per week in soda taxes, how much tax per week can they expect to recieve after the frist day of the year?

A. $850 per week
B. $900 per week
C. $950 per week
D. $1,000 per week

114. If Q is the midpoint of PR, which of the following could be the length of PR?



E. 10
F. 14
G. 20
H. 28

BC33Y-T